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500362

Sampling and Analysis Plan

Prepared By: Jerry Goedert

Project Name: RJ Refinery

U.S. EPA Project Number: 9804-02

Contractor Project Number: 7580402

U.S. EPA Contract Number: 68-W5-0031 EPA Region VIII

Approvals:

Jack Ackerman 7-7-98
EPA On-Scene Coordinator Date

START Deputy Team Leader Date

Jerry Goedert 4/8/98
START Project Leader Date

99.18.08

1.0 GENERAL SITE INFORMATION

Name: RJ Refinery

Street Address: ½ mi west of Hwy 189 on south side of Hwy 235

City: LaBarge State: WY Zip Code:

County:

Latitude:	Longitude:	Section:	Township:	Range:
__° __' __.__"	__° __' __.__"	_____	_____	_____

Approximate Area of Site: 5 Acres
_____ Square Feet

General Topography gentle slope

Nearest Residences are located within ¼ mi to the north.

2.0 OWNER/OPERATOR INFORMATION

Owner:	Operator:
Unknown	
Street Address:	Street Address:
City:	City:
State: Zip Code:	State: Zip Code:
Telephone:	Telephone:

Type of Ownership:

- ☒ Private
- ☐ County
- ☐ Municipality
- ☐ Not Specified
- ☐ Federal Agency
- ☐ State
- ☐ _____

3.0 NAME OF EPA AND/OR STATE AGENCY CONTACT:

EPA Contact	State Contact
Joyce Ackerman	LYNDA Fivas
Street Address: 999 18th St	Street Address: 3030 Energy Ln
City: Denver State: CO Zip Code: 80202	City: Casper State: WY Zip Code: 82604
Telephone: 303-312-6822	Telephone: 307-473-3450

4.0 GENERAL SITE CHARACTERISTICS

Years of Operation:

☐ Known ☒ Unknown

Beginning year_____ Ending Year_____ Abandoned Since_____

Status of Site:

☐ Active ☐ Not Specified ☒ Inactive ☐ NA (G, plume, etc.)

Predominant Land Uses Within One Mile of Site (Check all that apply):

☐	Industrial	☐	Agricultural	☐	DEI
☐	Commercial	☐	Mining	☐	Other Federal Facility
☒	Residential	☐	DOD	☒	undeveloped
☐	Forest/Fields	☐	DOE	☐	_____

Site Setting:

☐ Urban
☐ Suburban
☒ Rural

Previous Investigations/Assessments/Permit Violations

☐ Yes - Type_____
☐ No
☐ Unknown

Distance to surface water from site: 0 (small creek runs through site)

☐ Water Intake(s) located within __ miles

Distance to closest domestic or municipal well: unknown

Facility Type / Site Operations (Check all that apply):

☐	Chemical Manufacturing	☐	Private Residence/Neighborhood
☐	Lumber and Wood Products	☐	Metal Forging or Stamping
☐	Drum Recycling	☐	Junk/Salvage Yard
☐	Plastic and/or Rubber Products	☐	Landfill
☐	Paints, Varnishes	☐	Metal Coating, Plating or Engraving
☐	Agricultural Chemicals	☐	Mining
☐	Petrochem Manufacturing	☐	Incinerator/Smelter
☒	Refinery	☐	Miscellaneous Chemical Products
☐	Retail Gasoline Station	☐	Industrial
☐	Battery Reclamation	☐	Treatment/Storage, or Disposal
☐	Tannery	☐	Municipal
☐	Electronic Equipment	☐	Other Manufacturing_____
☐	Fabricated Metal Products	☐	Federal Facility_____
☐	_____	☐	_____
☐	_____	☐	_____
☐	_____	☐	_____

5.0 REMEDIAL UNITS AND WASTE CHARACTERISTICS

Remedial Units: (Check all that apply)

☐	Underground Tanks	☒	Tanks and Non-Drum Containers
☐	Vats	☒	Surface Impoundment
☐	Lagoons	☐	Drums
☐	Tailings Pile	☐	Trash Pile (open dump)
☐	Landfill	☒	Buildings
☐	Chemical Waste Pile	☐	Storage Areas
☐	Process Areas	☐	Land Treatment
☐	Contaminated Soil	☐	Laboratory
☐	Railroad Tracks	☐	Roads/ Access Ways
☐	Contaminated Groundwater Plume (unidentified source)	☐	Contaminated Surface Water/Sediment (unidentified source)
☐	Wetlands	☐	Injection Wells
☐	Stormwater Ponds	☐	Wastewater Ponds
☐	No Remedial Unit Identified	☐	Drainage Ditches
☐	Scrap Metal or Junk Pile	☐	_____

The following types of materials were handled at the site: (Check all that apply)

☐	Unknown	☐	Pesticides/Herbicides	☐	Organics	☐	Acids
☐	Metals	☐	Bases	☒	Inorganics	☐	Solvents
☐	Explosives	☐	Municipal Waste	☐	Oily Waste		
☐	Mine Waste	☐	Radioactive Waste	☐	Construction/Demolition Waste		
☐	Laboratory/Hospital Waste			☒	Petroleum Products		
☐	Paint/Pigments			☐	_____		

Physical State of Waste as Deposited (Check all that apply):

☒ Solid ☐ Sludge ☐ Powder ☐ Liquid ☐ Gas ☐ _____

The Contaminants of Concern are:

Contaminants	Concentration Range
lead	unknown
petroleum hydrocarbons	unknown

The quantity or areal extent of contamination to be addressed is: 5 acres

The physical/chemical threat to the population at risk is: low

The following project limitations (e.g., time) have been identified: none

The following sampling limitations (e.g., access, potential hazards) have been identified: none

The basis for the site information is: ☐ Site maps ☐ Geological information ☐ Disposal records ☐ Photos ☐ Historical data ☒ State investigation ☐ Federal investigation ☐ Personal interviews ☐ _____

6.0 PROJECT OBJECTIVES

6.1 Project Stage

- ☒ Early Assessment
- ☐ Advanced Assessment, Phase I
- ☐ Advanced Assessment, Phase II
- ☐ Cleanup Attainment

6.2 Regulatory Objectives: identify extent & magnitudes of CERCLA hazardous substances

Action levels for contaminants: Risk-based TBD

The basis for this sampling effort is: State investigation

The work involved is as follows: sample site waste & perform Recon

The planned activities will resolve the problem as follows: Confirm presence of CERCLA hazardous substances

The intended use and users of the data are: EPA to determine the necessity of removal

The decision makers are: EPA

6.3 Data Use Objectives: The following project objectives and data types* will be applied to this project (Choose from lists below):

	Sample Objective	Program Area: Removal	Program Area: Site Assessment
☐	H&S assessment for worker protection	S	S
☐	General physical or chemical properties/sources	S	S
☐	Delineation of plume in groundwater	S	S
☐	Sample location selection	S	S
☒	Identification of hot spots	S	S
☒	Identify sources	S	S
☒	Extent of contamination	S	S
☐	Migration pathways	S	D
☐	Transport mechanisms	S	S
☐	Obtain broad screen of contaminants	S	S
☒	Document observed release	S	D
☒	Identify contaminants	S	S
☐	Unit/area concentrations	S	NA
☐	Treatment and disposal options	S	D
☐	Threat to humans	S	S/D
☐	Threat to environment	S	S/D
☐	Background/control	S/D	S/D
☐	Verification of cleanup	S/D	NA
☐	Ecological assessment	S	NA
☐	Quantity of contamination	S	S
☐	Compare to benchmark	S	S/D
☐	Emergency response	S/D	NA
☒	Determine presence of contamination	NA	S/D

* = General descriptions of the data types and specific QA/QC requirements for various common analyses are described in Appendix A.
S = Non-definitive (i.e., screening) data
S/D = Non-definitive data with 10% definitive confirmation
D = Definitive data
N/A = Not applicable

Screening Data with Definitive Confirmation: Screening data are generated by rapid, less precise methods of analysis and less rigorous sample preparation. Screening data provide analyte identification and quantification, although the quantification may be relatively imprecise. At least 10% of the screening data are confirmed using analytical methods and QA/QC procedures and criteria associated with definitive data. Screening data without associated confirmation data are not considered to be data of known quality.

Definitive Data: Definitive data are generated using rigorous analytical methods, such as approved EPA reference methods. Data are analyte-specific, with confirmation of analyte identity and concentration. Methods produce tangible raw data (e.g., chromatograms, spectra, digital values) in the form of paper printouts or computer-generated electronic files. Data may be generated at the site or at an off-site location, as long as the QA/QC requirements are satisfied. For the data to be definitive, either analytical or total measurement error must be determined.

7.0 Sampling Design

The following sections summarize the sampling design. Put the number for each matrix type next to each analysis for the same matrix, and use that number in the blanks associated with the analytical parameters, sampling approach, and sampling equipment (Sections 7.2, 7.3 and 8.1).

7.1 Matrix: Air	Water	Liquid Waste	Soil/Sediment/Solids
1 Ambient air	1 Potable Water	1 Oil	1 Soil
2 Waste material	2 Surface Water	2 Drum Liquid	2 Drum Solid
3 Soil gas	3 Groundwater	3 Tank Liquid	3 Tank Solid
4 _____	4 _____	4 Waste Material	4 Waste Material
5 _____	5 _____	5 _____	5 Sediment
6 _____	6 _____	6 _____	6 _____

7.2 Parameter: Air	Water	Liquid Waste	Soil/Sediment/Solids
__ 2,4-D & 2,4,5-T	__ BNA (SVOC)	__ BNA (SVOC)	__ Ash Content
__ Aromatic Amines	__ BOD	__ BOD	__ BNA (SVOC)
__ Aromatic Hydrocarbons	__ COD	__ COD	__ BTU
__ Asbestos Fibers	__ Corrosivity	__ Corrosivity	__ Creosotes
__ Bacteria	__ Creosotes	__ Creosotes	__ Cyanide
__ BP Hydrocarbons (36-126°C)	__ Cyanide	__ Cyanide	__ Dioxin/Furans
__ Cyanides	__ Dioxins/Furans	__ Dioxins/Furans	__ Haz Cat
__ Metals	__ Haz Cat	__ Haz Cat	__ Heavy Metal Content
__ Fibers	__ Herbicides	__ Herbicides	__ Herbicides
__ Formaldehyde	__ Ignitability	__ Ignitability	__ Ignitability
__ Fungi	__ Metals	__ Metals	1 Metals
__ Halogenated Hydrocarbons	__ Oil and Grease	__ Oil and Grease	__ Oil and Grease
__ Inorganic Acids	__ PAHs	__ PAHs	__ PAHs
__ Mercury	__ Pesticides/PCBs	__ Pesticides/PCBs	__ Pesticides/PCBs
__ Organochlorine Pest/PCBs	2 Petroleum Hydrocarbons	__ Petroleum Hydrocarbons	__ Petroleum Hydrocarbons
__ PAHs/PNAs	__ TEPH	__ TEPH	__ TEPH
__ PCBs	__ TVPH	__ TVPH	__ TVPH
__ PM_{10}	__ Phenols	__ Phenols	__ Phenols
__ Total Nuisance Dust	__ Reactivity (CN and sulfide)	__ Reactivity (CN and sulfide)	__ Reactivity (CN and Sulfide)
__ Vinyl Chloride	__ TOC	__ TOC	__ Sulfur
__ VOC	__ TOX	__ TOX	__ TCLP - Hg
__ _____	__ VOC	__ VOC	1 TCLP - Metals (except Hg)
__ _____	__ _____	__ _____	__ TCLP - Semivolatile
__ _____	__ _____	__ _____	__ TCLP - Volatile
__ _____	__ _____	__ _____	__ TOC
__ _____	__ _____	__ _____	__ Total Solids
__ _____	__ _____	__ _____	__ TOX
__ _____	__ _____	__ _____	__ VOC
__ _____	__ _____	__ _____	4 Asbestos
__ _____	__ _____	__ _____	__ _____
__ _____	__ _____	__ _____	__ _____
__ _____	__ _____	__ _____	__ _____
__ _____	__ _____	__ _____	__ _____

7.3 Sampling Approach

Air	Water	Liquid Waste	Soil/Sediment/Solids
Sample Approach (check one)	Sample Approach (check one)	Sample Approach (check one)	Sample Approach (check one)
___ Judgmental ___ Systematic Grid ___ Worst Case (Air Only) ___ Search (hot spots) ___ Random ___ Systematic Random ___ One Time ___ Stratified Random ___ Transect ___ Typical ___ Composite (explain below) ___ _____ ___ _____ ___ _____	✓ Judgmental ___ Systematic Grid ___ Search (hot spots) ___ Random ___ Systematic Random ___ One Time ___ Stratified Random ___ Transect ___ Typical ___ Composite (explain below) ___ _____ ___ _____ ___ _____ ___ _____	___ Judgmental ___ Systematic Grid ___ Search (hot spots) ___ Random ___ Systematic Random ___ One Time ___ Stratified Random ___ Transect ___ Typical ___ Composite (explain below) ___ _____ ___ _____ ___ _____ ___ _____	✓ Judgmental ___ Systematic Grid ___ Search (hot spots) ___ Random ___ Systematic Random ___ One Time ___ Stratified Random ___ Transect ___ Typical ___ Composite (explain below) ___ _____ ___ _____ ___ _____ ___ _____
Samples will be composited as follows: ___	Samples will be composited as follows: ___	Samples will be composited as follows: ___	Samples will be composited as follows: ___

7.4 Justification for Sampling Frequency

☑ Directive of OSC
☐ _____
☐ _____
☐ _____
☐ _____

8.0 SAMPLING AND ANALYSIS

Table 1, "Environmental and Quality Control Sample Quantities for Environmental Analyses" identifies the number of field and QC samples to be collected. Include background samples and designate which samples will be used for Lab/Field QC. Include field analyses.

Complete one Table 1 for each Remedial Unit to be sampled for this project. Make extra copies of Table 1 if necessary

8.1 Equipment Utilized Per Sampling Media for samples indicated in Table 1:

If more than one piece of equipment is used per matrix, put the number of the matrix type from Section 7.1 on the line next to the item of equipment (e.g., 1 or 1, 2). Use the letter associated with each type of equipment on the line next to equipment fabrication and circle sampling equipment that is to be decontaminated (non-dedicated items). Put the letter associated with each equipment item for decontamination next to each applicable decontamination step (Section 8.3).

Air	Water	Liquid Waste	Soil/Sediments/Solids
a __ 0.8 um Filter (MCE)	a __ Bacon Bomb	a __ Bacon Bomb	a __ Auger
b __ 0.8-1.2 um, 25 mm Filter	b __ Bailer	b __ Bailer	b __ Backhoe
c __ 37 mm, 5 um PVC Filter	c __ Bladder Pump	c __ Peristaltic Pump	c __ Bucket Auger
d __ Bubbler	d __ Peristaltic Pump	d __ Dip Sampler	d __ Chisel
e __ Carbon Tubes	e __ Dip Sampler	e __ Drum Thief	e __ Eckman Dredge
f __ Charcoal Tube	f __ Drum Thief	f __ Kemmerer Bottle	f __ Electric Hammer
g __ Filter and Impinger	g __ Kemmerer Bottle	g __ Sample Bottle	g __ Ponar Dredge
h __ Florisil Tube	h __ Sample Bottle	h __ COLIWASA	h __ Sample Bottle
i __ Glass Fiber Filter	i __ COLIWASA	i __ _____	i __ Sampling Treir
j __ Polyurethane Foam Filter	j __ Geoprobe	j __ _____	j X Scoop
k __ Silica Gel Tube	k __ Piezometer	k __ _____	k __ Shelby Tube
l __ Solid Sorbent Tube	l X Dip Sample bottle	l __ _____	l __ Shovel
m __ Summa Canister	m __ in water	m __ _____	m __ Sludge Judge
n __ Tenax Tube	n __ _____	n __ _____	n __ Soil Coring Device
o __ XAD-2 Tubes	o __ _____	o __ _____	o __ Spatula
p __ _____	p __ _____	p __ _____	p __ Split Spoon
q __ _____	q __ _____	q __ _____	q __ Thin-Wall Tube Sampler
r __ _____	r __ _____	r __ _____	r __ Trowel
s __ _____	s __ _____	s __ _____	s __ Geoprobe Soil Core
t __ _____	t __ _____	t __ _____	t __ Slam Bar Soil Core
u __ _____	u __ _____	u __ _____	u __ _____
v __ _____	v __ _____	v __ _____	v __ _____

8.2 Fabrication

Air	Water	Liquid Waste	Soil/Sediments/Solids
__ Carbon steel	__ Carbon steel	__ Carbon steel	__ Carbon steel
__ Stainless steel	__ Stainless steel	__ Stainless steel	__ Stainless steel
__ Teflon (PTFE)	__ Teflon (PTFE)	__ Teflon (PTFE)	__ Teflon (PTFE)
__ PVC	__ PVC	__ PVC	__ PVC
__ Glass	__ Glass	__ Glass	__ Glass
__ Plastic	__ Plastic	__ Plastic	X Plastic
__ Plastic/polyethylene	__ Plastic/polyethylene	__ Plastic/polyethylene	__ Plastic/polyethylene
__ Carbon steel/stainless steel	__ Carbon steel/stainless steel	__ Carbon steel/stainless steel	__ Carbon steel/stainless steel
__ Acetate	__ Acetate	__ Acetate	__ Acetate

8.3 Decontamination Steps (Check applicable choices for non-dedicated equipment)

Air	Water	Liquid Waste	Soil/Sediments/Solids
__ Physical removal	__ Physical removal	__ Physical removal	__ Physical removal
__ Non-phosphate detergent wash	__ Non-phosphate detergent wash	__ Non-phosphate detergent wash	__ Non-phosphate detergent wash
__ Potable water rinse	__ Potable water rinse	__ Potable water rinse	__ Potable water rinse
__ 10% nitric acid rinse	__ 10% nitric acid rinse	__ 10% nitric acid rinse	__ 10% nitric acid rinse
__ Hexane rinse	__ Hexane rinse	__ Hexane rinse	__ Hexane rinse
__ Methylene chloride rinse	__ Methylene chloride rinse	__ Methylene chloride rinse	__ Methylene chloride rinse
__ Pesticide grade acetone rinse	__ Pesticide grade acetone rinse	__ Pesticide grade acetone rinse	__ Pesticide grade acetone rinse
__ Distilled/deionized water rinse	__ Distilled/deionized water rinse	__ Distilled/deionized water rinse	__ Distilled/deionized water rinse
__ Organic free water rinse	__ Organic free water rinse	__ Organic free water rinse	__ Organic free water rinse
__ Air dry	__ Air dry	__ Air dry	__ Air dry
__ Cover with _____	__ Cover with _____	__ Cover with _____	__ Cover with _____

8.4 Required Support Vehicles/Facilities:

- [x] one Rental vehicle
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

8.5 Disposal of Investigation-Derived Wastes (IDW)

- [x] No IDW will be generated.
- [ ] IDW will be containerized and characterized for appropriate disposal.
- [ ] IDW will be placed on site in an approved location.
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

8.6 Analytical Summary

Complete Table 2. Table 2, "Environmental Sample Collection and Laboratory Analysis specifications" contains information pertinent to sampling, such as the analytical methods to be used, sample preservation method (include field filtration when necessary) to be used, container types and the quantity of sample to be collected at each sampling location, the preservation method to be used, and the sample holding times (based on the parameter being analyzed for and the matrix). For the air matrix, this table identifies the sample flow rate rather than sample containers and the volume to be collected rather than the preservative.

8.7 Performance Requirements

Complete Table 3. Table 3, "Quality Assurance Objectives for Environmental Samples" contains the required detection limits, analytical method references, the associated required data type designation, and three of the five data assessment parameters (precision, accuracy, completion). The parameters of comparability and representativeness are addressed in the project design and rationale sections of this SAP.

The EPA supports the implementation of the Data Quality Objectives (DQO) Process to ascertain the type, quality, and quantity of data necessary to address site-specific problems ("Guidance for the Data Quality Objectives Process, EPA QA/G-4," EPA 1994d). It is the responsibility of the Project Leader, in conjunction with the QAO, to implement the DQO process as part of the project planning activities. In those cases in which the DQO process is not used, it is still necessary to state the project quality objectives and measurement performance criteria in the project-specific SAP.

9.0 TECHNICAL STANDARD OPERATING PROCEDURES

START Technical Standard Operating Procedures (TSOPs) will be implemented for this project. TSOPs are typically applicable procedures that may be varied or changed as required, dependent upon site conditions or equipment limitations imposed by the procedure. In all instances, the procedures employed will be documented and associated with the final project deliverables.

Indicate Applicable START Technical Standard Operating Procedures (check all that apply):

- ☒ TSOP 4.1 - General Field Operation - describes the overall field organization in support of sample collection, sample identification, record keeping, field measurements, and data collection.
- ☒ TSOP 4.2 - Sample Containers, Preservation and Maximum Holding Times - describes the methods used to place samples in appropriate containers to preserve specific samples, and the maximum time a sample can be held before it is analyzed.
- ☒ TSOP 4.3 - Chain of Custody - outlines the documentation necessary to trace sample possession.
- ☒ TSOP 4.4 - Sample Identification, Labeling, and Packaging - specifies the methods for sample identification and labeling. Sample packing and shipment methods are also outlined.
- ☒ TSOP 4.5 - Sample Location Documentation - outlines the methods for documentation of all sample locations.
- ☒ TSOP 4.6 - Use and Maintenance of Field Log Books - outlines the proper documentation of information in field log books during data collection activities.
- ☒ TSOP 4.7 - Hazardous Waste Characterization - outlines the methods for characterization of unknown materials for disposal, bulking, recycling, grouping and classification purposes.
- ☐ TSOP 4.8 - Investigation Derived Waste Management - outlines the management of wastes generated during environmental field operations.
- ☐ TSOP 4.9 - Monitor Well Installation - describes the methods for monitoring well installation, including design, construction procedures, and materials.
- ☐ TSOP 4.10 - Monitor Well Development - describes the methods for monitoring well development, including data recording formats.
- ☐ TSOP 4.11 - Equipment Decontamination - describes the techniques used to decontaminate equipment prior to sample collection or data measurement.
- ☐ TSOP 4.12 - Groundwater Sampling - establishes the methods for monitoring well purging, sample collection, and equipment use when sampling.
- ☐ TSOP 4.12A - Groundwater Sampling for Low Flow Purge - describes equipment and operations for sampling groundwater monitor wells using a pump to obtain samples with a minimum of turbidity.
- ☐ TSOP 4.13 - Water Level Measurement - describes the methods used to record water levels at surface water locations and in groundwater monitoring wells.
- ☐ TSOP 4.14 - Water Sample Field Measurements - describes the measurement techniques and data requirements associated with the collection of either a groundwater or surface water sample.

- ☐ TSOP 4.15 - Flow Measurements - describes the methods for conducting flow measurements during surface water sampling.
- ☒ TSOP 4.16 - Surface and Shallow Depth Soil Sampling - establishes the methods for sample collection using a variety of sampling devices. Techniques for avoiding sample and equipment cross-contamination are also discussed.
- ☐ TSOP 4.17 - Sediment Sampling - establishes the methods for sample collection using a variety of sampling devices. Techniques for avoiding sample and equipment cross-contamination are also discussed.
- ☐ TSOP 4.18 - Surface Water Sampling - establishes the methods for sample collection and equipment use at a variety of surface water locations. Techniques for avoiding water body and sample cross-contamination are also discussed.
- ☐ TSOP 4.19 - Soil Gas Sampling - outlines the methods for decontamination and soil gas sampling for routine field operations.
- ☒ TSOP 4.20 - Drum and Container Sampling - describes methods for safe and effective sampling of drums and containers less than 120 gallons.
- ☐ TSOP 4.21 - Tank Sampling - describes the measurement techniques used in sampling aboveground storage tanks.
- ☐ TSOP 4.22 - Aquifer Slug Testing - establishes the methods and data recording formats for conducting slug tests in groundwater monitoring wells.
- ☐ TSOP 4.23 - Aquifer Pump Testing - establishes the methods and data recording formats for conducting pump tests in groundwater extraction and monitoring wells.
- ☐ TSOP 4.24 - Geological Borehole Logging - describes the information and observations to be recorded for the identification, logging, and sampling of a borehole. Sampling methods and data collection formats are also presented.
- ☐ TSOP 4.25 - Residential Dust Sampling - describes the methods for collecting composite dust samples in a residential community.
- ☐ TSOP 4.26 - Chip, Wipe and Sweep Sampling - describes the equipment and methods required for obtaining a representative chip, wipe or sweep sample to monitor potential surface contamination.
- ☐ Draft Equipment SOP 1.6 - TW Spectrace 9000 FPXRF - describes the equipment and methods required for obtaining a representative metals analyses of selected materials.

10.0 SAMPLE DOCUMENTATION, HANDLING, AND SHIPMENT

Sample documentation, handling, and shipment will be in accordance with the START generic QAPP and START TSOPs.

11.0 QUALITY ASSURANCE ASSESSMENTS

The following QA Assessments will be applied to this project:

- ☒ Independent technical review
- ☒ Technical edit
- ☐ Readiness review
- ☐ Field surveillance
- ☐ Field audit
- ☐ Management system review
- ☐ _____

A complete description of these reviews can be found in Section 12.0 of the ERP Generic QAPP.

12.0 DATA VALIDATION

Data will be validated as indicated: ☒ QC review ☐ Validation ☐ Undecided

* Data Validation is required for definitive data.

13.0 DELIVERABLES

The following deliverables will be provided: (Check all that apply)

- ☒ Trip Report: A detailed accounting of what occurred during each sampling mobilization will be prepared within (two weeks) of the last day of each sampling mobilization. The Trip Report will be organized into three or four major sections: Background, Observations and Activities, Conclusions and Recommendations (optional), and Future Activities. Information will be provided regarding major events, dates, and personnel on site (including affiliations).

- ☐ Status Report: Prepared periodically (weekly/monthly/etc.) To provide a detailed accounting of past and future sampling activities. Information will be provided on time and date of major events and personnel on site (including affiliations). The status report will be organized into three major sections: Background, Observations and Activities, and Future Activities.

- ☐ Analytical Report: Documentation of lab selection, raw data, or analytical results.

- ☐ Data Validation Report: Review of the data generated under this plan.

- ☐ (Draft) Final Report: Correlates available background information with data generated under this sampling event and identifies supportable conclusions and recommendations that satisfy the objectives of this sampling QA/QC plan.

The following illustrations will be provided:

- ☐ Maps (size specifications)
- ☒ Figures (titles/types)
- ☐ Drawings (scale)
- ☐ Field forms

14.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

Personnel Information:

The EPA On-Scene Coordinator, Joyce Ackerman, will provide overall direction to the START staff concerning project objectives, sampling needs, and schedule.

The START Project Leader, Jerry Goedert, is the primary point of contact with the EPA On-Scene coordinator. The Project Leader is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks.

The START Quality Assurance Officer, Randy Perlis, or his/her designee, _____, is responsible for ensuring field adherence to the Sampling QA/QC Plan and recording any deviations. The Analytical Services Coordinator is the primary contact with the analytical laboratory.

The following personnel will also work on this project:

Name	Responsibility

For a detailed description of personnel responsibilities, refer to Section 2.0 of the ERP generic QAPP.

15.0 SCHEDULE OF ACTIVITIES

Proposed Schedule of Work:

Activity	Start Date	End Date
Sampling	4/8/98	4/8/98

TABLE 1
Environmental and Quality Control Sample Quantities for Environmental Analyses
Remedial Unit _____

Sample ID / Location	Analysis					Quality Control Samples							Total Samples
						Lab QA/QC			Field QA/QC				
	TAL Metals	TCLP Metals	VOCs	TRPH	BTEX	Standard Reference Samples	MS/MSD	Other...	Field Replicates	Trip Blanks	Field Blank	Equipment Rinsate	
Soil	5	1											5
Product	1		1	1	1								2
	Asbestos												
Waste	2												2
Total Samples													

TABLE 1
Environmental and Quality Control Sample Quantities for Environmental Analyses
Remedial Unit _____

Sample ID / Location	Analysis					Quality Control Samples							Total Samples
						Lab QA/QC			Field QA/QC				
						Standard Reference Samples	MS/MSD	Other...	Field Replicates	Trip Blanks	Field Blank	Equipment Rinsate	
Total Samples													

TABLE 2
Environmental Sample Collection and Laboratory Analysis Specifications

Analysis	Analytical Method	Reference	Container[a]	Required Volume	Preservation[b]	Holding Time[c]
TAL Metals	SW-6010A	SW-846	Glass	8 oz	N/A	6 mos.
TCLP Metals	SW-3010	↓	Glass	8 oz	↓	2 wks
VOC's	SW-8260B	↓	AGV	40 ml	↓	1 wk
TRPH	418.1	↓	AGV	40 ml	↓	1 wk
BTEX	SW-8021B	↓	AGV	40 ml	↓	1 wk
Asbestos	↓	↓	HDPE	Small bag	↓	none

a Container types: AGV = amber glass vial; HDPE = high-density polyethylene bottle and cap; AGB = amber glass bottle.

b Sample preservation will be performed by the sampler immediately upon sample collection. Preservatives will be added to filtered samples following filtration. Containers used for volatile organic samples will be completely filled, permitting no head space.

c Holding times begin from the time of sample collection in the field. Two holding times indicate the maximum holding time until sample extraction and the maximum holding time.

TABLE 3
Quality Assurance Objectives for Environmental Samples

Analysis (for each matrix)	Analytical Method	Data Type	Units	Detection Limits	Accuracy %	Precision ±%	Completeness %

Note: The complete list of analytes determined from laboratory sample analysis is published in each reference document listed for the specified analytical method. Detection limit, accuracy, and precision values are presented in this table as ranges, but are assigned to each individual analyte as published in each reference document.

Data type refers to the following:
S = non-definitive data (i.e., screening);
S/D = non-definitive data with 10% definitive confirmation;
D = definitive data

ATTACHMENT 1
Data Types

QA/QC Levels	Non-Definitive (Screening)	Non-Definitive with 10% Definitive Confirmation (Screening with Confirmation)	Definitive
Data Uses	Data useful only for immediate situation; not defensible for decision making	Data useful for site assessment and decision making at OSC discretion	Data useful for enforcement, litigation, risk assessment, and most other uses
Typical Uses	• Exploratory data • Screening • Non-critical Decisions • Emergency situations • Waste profiling	• Site characterization • Waste characterization • Clean-up confirmation	• Enforcement • Litigation • Risk assessment
Quality Assurance Type	Data of Unknown Quality	Data of known quality (low level)	Data of known quality (high level)
Quality Assurance Elements	• Logged quality control checks • Qualified analyst	• Identification • Quantification • Confirmation of 10% of the samples by a definitive method • Error determination[1]	• Raw data • Definitive identification • Definitive quantification • Error determination
Validation	None	QC Review[2]	Yes
Quality Control Elements	• Instrument QC • Field QC • Analyst training	• Instrument QC • Field QC • Analyst training • QC within method parameters	• Instrument QC • Field QC • Analyst training • QC within method parameters • Document DLs

[1] Error determination is required for both the definitive and non-definitive portions of the data.

[2] QC review is required for all samples analyzed. Data validation is required for the confirmation data only.

ATTACHMENT 1
Data Types

QA/QC Levels	Non-Definitive (Screening)	Non-Definitive with 10% Definitive Confirmation (Screening with Confirmation)	Definitive
Sampling Plan	Optional	Mandatory	Mandatory
Typical Volatile Analyses	• Field GC	• Field GC with 10% of samples being confirmed by GC/MS with full QA/QC deliverables; duplicates and blanks.	• EPA Method 8240 or 8260; data package; replicates; blanks and spikes
		• GC method with 10% of samples being confirmed by GC/MS with full QA/QC deliverables; duplicates and blanks.	• EPA Method 8010/ 8020 with second column confirmation; data package replicate, blanks, and spikes.
Typical Non-volatile Analyses	• Immunoassay kits	• Immunoassay with 10% of samples being confirmed by GC/MS with full QA/QC deliverables; duplicates and blanks.	• EPA Method 8270; data package; replicates, blanks, and spikes.
		• GC method with 10% of samples being confirmed by GC/MS with full QA/QC deliverables; duplicates and blanks.	• EPA Method 8100/ 8120 with second column confirmation; data package; replicate, blanks, and spikes.
Typical Metal Analyses	• Field XRF	• Field XRF with 10% of samples being confirmed by ICP or AA with full QA/QC deliverables; duplicates and blanks.	• EPA Method 6010; data package; replicates, blanks, and spikes.
		• AA, ICP, IC, or wet chemistry methods with 10% of samples being confirmed by ICP or AA with full QA/QC deliverables; duplicates and blanks.	• EPA methods for AA (7000s); data package; replicate, blanks, and spikes.

ATTACHMENT 1
Data Types
(continued)

QA/QC Levels	Non-Definitive (Screening)	Non-Definitive with 10% Definitive Confirmation (Screening with Confirmation)	Definitive
Typical PCB/ Pesticide Analyses	• Immunoassay Kits	• Immunoassay kits[3] with 10% of samples being confirmed by GC/MS with full QA/QC deliverables; duplicates and blanks.	• EPA Method 8140-Pesticides; data package; replicates, blanks, and spikes.
		• GC method with 10% of samples being confirmed by GC on a second column with full QA/QC deliverables; duplicates and blanks.	• EPA Method 8080 with second column confirmation; data package; replicate, blanks, and spikes.
Typical Petroleum Hydrocarbon Analyses	• Immunoassay kits • Chem test kits (HANBY) • IR (EPA 413 and 418) methods	• Immunoassay, IR, and chemical analysis with 10% of samples being confirmed by GC/MS or EPA Method 8015 (modified) with second column confirmation with full QA/QC deliverables; duplicates and blanks.	• EPA Method 8015 (modified) with second column confirmation; data package; replicate, blanks, and spikes.
		• GC method with 10% of samples being confirmed by GC/MS or GC on two columns with full QA/QC deliverables; duplicates and blanks.	
Testing for physical parameters is not analyte specific. Therefore, by strict definition, any physical test would have to be considered non-definitive. However, the testing methods may be definitive if approved methodology is followed.			
Physical Parameters (pH, flash point, etc.)	• Field testing equipment	• Testing equipment with QC samples, duplicates, and blanks.	• Testing equipment; data package; and QC samples, duplicates, and blanks.

[3] Immunoassay kits used to generate Level I data must be capable of generating calibration, blank, duplicate, and estimation of error data.